

U.S. Patent Application No. 09/761,561
Amendment After Final dated October 2, 2003
Reply to Final Office Action dated July 2, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A microbicidal composition comprising at least one disinfectant and a complex of the formula R-M, wherein R is at least one organic chelating moiety and M is at least one metal ion, and where R is present in an at least equimolar amount based on the amount of M, and M is microbicidal to at least one microorganism, wherein said at least one organic chelating moiety is an amino acid, wherein said amino acid includes a double bonded oxygen, ~~and~~ wherein said double bonded oxygen of said amino acid is complexed to M at a pH of about 2 or less, and wherein said complex is a solid when present in an aqueous medium.

Claim 2 (original): The microbicidal composition of claim 1, further comprising an aqueous solution.

Claim 3 (original): The microbicidal composition of claim 1, wherein said at least one metal ion is a silver ion or colloidal silver or both.

Claim 4 (original): The microbicidal composition of claim 1, wherein said at least one metal ion of copper, zinc, mercury, chromium, manganese, nickel, cadmium, arsenic, cobalt, aluminum, lead, selenium, platinum, gold, titanium, tin, barium, vanadium, bismuth, iron, strontium, antimony, and the like, and combinations thereof.

Claim 5 (canceled)

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Claim 6 (canceled)

Claim 7 (original): The microbicidal composition of claim 1, wherein said at least one organic chelating moiety is formed from an alpha-amino acid.

Claim 8 (currently amended): The microbicidal composition of claim 1, wherein said at least one organic chelating moiety is ~~selected from~~ isoleucine, phenylalanine, leucine, lysine, methionine, threonine, tryptophan, valine, alanine, glycine, arginine, histidine, or ~~and~~ mixtures thereof.

Claim 9 (currently amended): A method to control the growth of microorganisms comprising contacting the microorganisms with a microbicidal composition comprising a complex of the formula R-M, wherein R is at least one organic chelating moiety and M is at least one metal ion, and where R is present in an at least equimolar amount based on the amount of M, and M is microbicidal to at least one microorganism, wherein said at least one organic chelating moiety is an amino acid, wherein said amino acid includes a double bonded oxygen, wherein said double bonded oxygen of said amino acid is complexed to M at a pH of about 2 or less, ~~and~~ wherein said microbicidal composition kills said microorganisms intracellularly, and wherein said complex is a solid when present in an aqueous medium.

Claim 10 (original): A method to control biofouling in a system, comprising introducing an effective amount of said microbicidal composition of claim 1 to said system to control said biofouling.

Claim 11 (original): The microbicidal composition of claim 1, wherein the molar ratio of

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R to M is from about 1:1 to about 2:1.

Claim 12 (original): The microbicidal composition of claim 2, wherein said microbicidal composition is present in said aqueous solution at a concentration of from about 0.001% to about 10% by total volume.

Claim 13 (currently amended): A method to prepare ~~the~~ a microbicidal composition comprising a complex of the formula R-M, wherein R is at least one organic chelating moiety and M is at least one metal ion, and where R is present in an at least equimolar amount based on the amount of M, and M is microbicidal to at least one microorganism, wherein said at least one organic chelating moiety is an amino acid, wherein said amino acid includes a double bonded oxygen, and wherein said double bonded oxygen of said amino acid is complexed to M, wherein said method comprises dissolving a salt containing metal in at least one inorganic acid and an aqueous source; and

adding at least one organic chelating compound containing R to form a metal complex having the formula R-M, wherein the preparation of the composition occurs at a pH of about 2.0 or less, and wherein said complex is a solid when present in an aqueous medium.

Claim 14 (previously presented): The microbicidal composition of claim 1, wherein said at least one disinfectant comprises one or more of chlorhexidine gluconate, chlorhexidine digluconate, chlorhexidine dihydrochloride, and chlorhexidine diacetate.

Claim 15 (previously presented): The microbicidal composition of claim 1, wherein said at least one disinfectant comprises one or more of isopropyl alcohol and hydrogen peroxide.

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Claim 16 (currently amended): A microbicidal composition comprising at least one disinfectant and a product obtained by combining at least one metal ion (M) with at least an equimolar amount of at least one organic chelating moiety (R) based on the amount of M, wherein M is microbicidal to at least one microorganism, wherein said at least organic chelating moiety is an amino acid, wherein said amino acid includes a double bonded oxygen, ~~and~~ wherein said double bonded oxygen of said amino acid is complexed to M at a pH of about 2 or less, and wherein said product is a solid when present in an aqueous medium.

Claim 17 (canceled)

Claim 18 (original): The microbicidal composition of claim 16 wherein said at least one metal ion is a silver ion or colloidal silver.

Claim 19 (original): A method to control the growth of a microorganism susceptible to treatment with a metal ion, said method comprising:

treating said microorganism with the microbicidal composition of claim 16.

Claim 20 (original): A method of controlling biofouling in a system, comprising introducing to said system an effective amount of the microbicidal composition of claim 16.

Claim 21 (currently amended): A microbicidal composition comprising a disinfectant and a complex of the formula R-M, wherein R is at least one organic chelating moiety and M is at least one metal ion, and where R is present in an at least equimolar amount based on the amount of M, and M is microbicidal to at least one microorganism, wherein said at least one organic chelating moiety is formed from an amino acid, said organic chelating moiety has a

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carboxylic group which forms a dative covalent bond with M, ~~and~~ wherein said carboxylic group includes a double bonded oxygen which is complexed to M at a pH of about 2 or less, and wherein said complex is a solid when present in an aqueous medium.

Claim 22 (original): The microbicidal composition of claim 21, wherein M is complexed through the doubled bonded oxygen of the carboxylic group.

Claim 23 (currently amended): A method for preserving cut flowers or plants from pathological microorganisms comprising:

treating said flowers and plants with the microbicidal composition comprising a complex of the formula R-M, wherein R is at least one organic chelating moiety and M is at least one metal ion, and where R is present in an at least equimolar amount based on the amount of M, and M is microbicidal to at least one microorganism, wherein said at least one organic chelating moiety is an amino acid, wherein said amino acid includes a double bonded oxygen, ~~and~~ wherein said double bonded oxygen of said amino acid is complexed to M at a pH of about 2 or less, and wherein said complex is a solid when present in an aqueous medium.

Claim 24 (original): The method of claim 23, wherein the flowers and plants are treated by immersing a portion of the flower or plant in an aqueous solution of the composition of claim 1.

Claim 25 (original): The method of claim 23, wherein the flowers and plants are sprayed with an aqueous solution of the composition of claim 1.

Claim 26 (currently amended): A method for protecting living flowers or plants

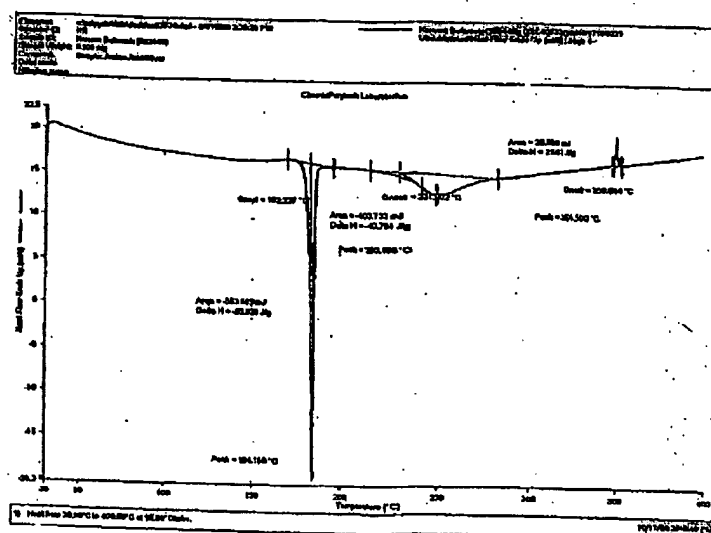
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comprising treating said flowers and plants with the microbicidal composition comprising a complex of the formula R-M, wherein R is at least one organic chelating moiety and M is at least one metal ion, and where R is present in an at least equimolar amount based on the amount of M, and M is microbicidal to at least one microorganism, wherein said at least one organic chelating moiety is an amino acid, wherein said amino acid includes a double bonded oxygen, and wherein said double bonded oxygen of said amino acid is complexed to M at a pH of about 2 or less, and wherein said complex is a solid when present in an aqueous medium.

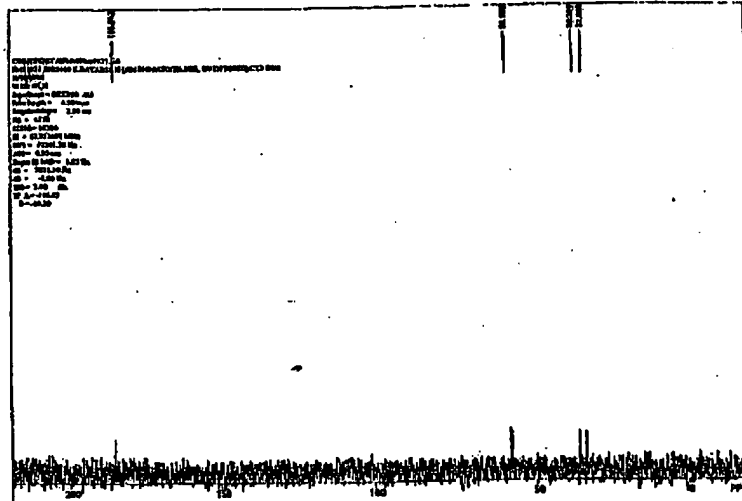
Claim 27 (original): The method of claim 23, wherein the flowers or plants are treated by introducing into a container of water a tablet comprising the microbicidal composition of claim 1.

Claim 28 (currently amended): A microbicidal composition comprising an organo-metallic chelate of silver cations and glutamic acid, wherein the chelate exhibits the structural spectra depicted in Figures 1, 2, or 3, ~~or combinations thereof below:~~

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Claim 29 (original): The microbicidal composition of claim 1, further comprising artificial or natural colors or flavors.

Claim 30 (original): The microbicidal composition of claim 1, wherein said composition is a gel or solid.